

OIL ANALYSIS REPORT

Sample Rating Trend



history2



NEW FLYER 1219

Component **Diesel Engine**

SAFETY-KLEEN PERFORMANCE PLUS XHD-7 15W40 (--- GAL)

SAMPLE INFORMATION

DIAGNOSIS

Recommendation

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

Wear

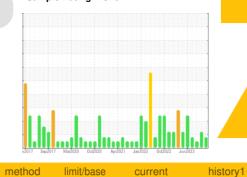
All component wear rates are normal.

Contamination

There is a moderate amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

Fluid Condition

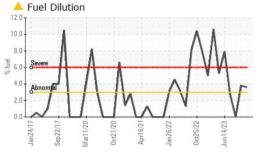
The oil is no longer serviceable due to the presence of contaminants.

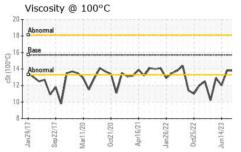


Sample Number Client Info WC08477969 WC08493751 WC0849378 Sample Date Client Info 838906 829837 13 Sep 2023 14 Sep 2023 15 Sep 2023 15 Sep 2024 15 Sep 2024 <th>OAMI LE IM OTTO</th> <th>711014</th> <th>method</th> <th>IIIIIIVDase</th> <th>Current</th> <th>Thistory</th> <th>HISTOLYZ</th>	OAMI LE IM OTTO	711014	method	IIIIIIVDase	Current	Thistory	HISTOLYZ
Machine Age kms Client Info 838906 829837 819965 Oil Age kms Client Info 0 0 0 0 Oil Changed Client Info N/A N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG N.EG NEG NEG NEG 0.0 0 Iron ppm ASTM 05185(m) >5.5 <1 <1 <1 Klockel ppm ASTM 05185(m) >2.2 0 0 0 Silver ppm ASTM 05185(m) >2.2 1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	Sample Number		Client Info		WC0877969	WC0849751	WC0849979
Oil Age kms Client Info N/A N/A N/A N/A Sample Status Client Info N/A N/A N/A N/A CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM DS188/ml >75 17 20 15 Chromium ppm ASTM DS188/ml >5 <1	Sample Date		Client Info		13 Dec 2023	20 Oct 2023	13 Sep 2023
Oil Changed Status Client Info N/A ABNORMAL ABNORMAL ABNORMAL NORMAL N/A NORMAL NORMAL CONTAMINATION method limit/base current bistory1 history2 Water WC Method >0.2 NEG NEG NEG NEG O.0 NEG NEG NEG O.0 Glycol WC Method Imit/base current bistory1 history2 Iron ppm ASTM 05185(m) >75 17 20 15 Chromium ppm ASTM 05185(m) >5 <1 <1 <1 Nickel ppm ASTM 05185(m) >2 <1 <1 <1 Nickel ppm ASTM 05185(m) >2 <1 <1 <1 Aluminum ppm ASTM 05185(m) >2 <1 <1 <1 Lead ppm ASTM 05185(m) >2 <1 <1 <1 Lead ppm ASTM 05185(m) >2 <1 <1 <1 Copper ppm ASTM 05185(m) >4 0 0 0 Vanadium ppm ASTM 05185(m) >4 0 0 0 Vanadium ppm ASTM 05185(m) 0 0 0 <th>Machine Age</th> <th>kms</th> <th>Client Info</th> <th></th> <th>838906</th> <th>829837</th> <th>819965</th>	Machine Age	kms	Client Info		838906	829837	819965
Sample Status Method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method Imit/base current history1 history2 Iron ppm ASTM DS185(m) >75 17 20 15 Chromium ppm ASTM DS185(m) >5 <1 <1 <1 Nickel ppm ASTM DS185(m) >4 0 0 0 Silver ppm ASTM DS185(m) >2 <1 <1 <1 Aluminum ppm ASTM DS185(m) >2 <1 <1 <1 Lead ppm ASTM DS185(m) >25 1 2 1 Lead ppm ASTM DS185(m) >4 0 0 0 Copper ppm ASTM DS185(m) >4 0 0 0 Vanadium ppm ASTM DS185(m) 0 0 0	Oil Age	kms	Client Info		0	0	0
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG 0.0 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM DS185(m) >5 -1 -1 -1 Chromium ppm ASTM DS185(m) >5 -1 -1 -1 Nickel ppm ASTM DS185(m) >4 0 0 0 Silver ppm ASTM DS185(m) >2 -1 <1 <1 Aluminum ppm ASTM DS185(m) >25 1 2 1 Lead ppm ASTM DS185(m) >10 -1 <1 <1 Copper ppm ASTM DS185(m) >0 0 0 0 Early Illiam ppm ASTM DS185(m) 0 0 0	Oil Changed		Client Info		N/A	N/A	N/A
Water Glycol WC Method (Plycol) >0.2 NEG (Plycol) Netory) Netory Netory<	Sample Status				ABNORMAL	ABNORMAL	NORMAL
Glycol WC Method NEG NEG 0.0 WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185(m) >5 17 20 15 Chromium ppm ASTM D5185(m) >5 <1	CONTAMINATION	١	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185(m) >75 17 20 15 Chromium ppm ASTM D5185(m) >5 <1 <1 <1 Nickel ppm ASTM D5185(m) >2 0 0 0 Silver ppm ASTM D5185(m) >2 1 <1 <1 Aluminum ppm ASTM D5185(m) >2 <1 <1 <1 Lead ppm ASTM D5185(m) >15 1 2 1 Copper ppm ASTM D5185(m) >100 <1 <1 <1 Copper ppm ASTM D5185(m) >4 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Seryllium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	0.0
Chromium ppm ASTM D5185(m) >5 <1	WEAR METALS		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185(m) >5 <1	Iron	maa	ASTM D5185(m)	>75	17	20	15
Nickel	-		. ,				
Titanium ppm ASTM D5185(m) >2 0 0 0 Silver ppm ASTM D5185(m) >2 <1 <1 <1 Aluminum ppm ASTM D5185(m) >15 1 2 1 Lead ppm ASTM D5185(m) >25 1 2 1 Copper ppm ASTM D5185(m) >4 0 0 0 Tin ppm ASTM D5185(m) >4 0 0 0 Antimony ppm ASTM D5185(m) 0 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 58 65 57 </th <th></th> <th></th> <th>. ,</th> <th></th> <th></th> <th></th> <th></th>			. ,				
Silver ppm ASTM D5185(m) >2 <1			. ,	>2	0	0	0
Aluminum ppm ASTM D5185(m) >15 1 2 1 Lead ppm ASTM D5185(m) >25 1 2 1 Copper ppm ASTM D5185(m) >100 <1 <1 <1 Tin ppm ASTM D5185(m) >4 0 0 0 Antimony ppm ASTM D5185(m) 0 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 1			. ,		-		
Lead ppm ASTM D5185(m) >25 1 2 1 Copper ppm ASTM D5185(m) >100 <1	Aluminum		. ,	>15	1	2	1
Copper ppm ASTM D5185(m) >100 <1	Lead		1 /	>25		2	1
Tin ppm ASTM D5185(m) >4 0 0 0 Antimony ppm ASTM D5185(m) 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 1 1 1 1 Barium ppm ASTM D5185(m) <1	Copper		ASTM D5185(m)	>100	<1	<1	<1
Antimony ppm ASTM D5185(m) 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 1 1 1 1 1 Barium ppm ASTM D5185(m) 58 65 57 Molybdenum ppm ASTM D5185(m) 0 0 <1			ASTM D5185(m)	>4	0	0	0
Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 1 1 1 1 Barium ppm ASTM D5185(m) <1	Antimony		ASTM D5185(m)		0	0	0
Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 1 1 1 1 Barium ppm ASTM D5185(m) <1	Vanadium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 1 1 1 1 Barium ppm ASTM D5185(m) <1 <1 0 Molybdenum ppm ASTM D5185(m) 58 65 57 Manganese ppm ASTM D5185(m) 0 0 <1 Magnesium ppm ASTM D5185(m) 941 1070 932 Calcium ppm ASTM D5185(m) 1020 1152 992 Phosphorus ppm ASTM D5185(m) 961 1076 999 Zinc ppm ASTM D5185(m) 2431 2693 2418 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 3 4 3 Sodium ppm	Beryllium		ASTM D5185(m)		0	0	0
Boron ppm ASTM D5185(m) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 ASTM D5185(m) 4 1 0 0 0 4 0 Molybdenum ppm ASTM D5185(m) 58 65 57 57 Manganese ppm ASTM D5185(m) 0 0 <1	Cadmium	ppm	ASTM D5185(m)		0	0	0
Barium ppm ASTM D5185(m) <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 58 65 57 Manganese ppm ASTM D5185(m) 0 0 <1	Boron	ppm	ASTM D5185(m)		1	1	1
Manganese ppm ASTM D5185(m) 0 <1	Barium	ppm	ASTM D5185(m)		<1	<1	0
Magnesium ppm ASTM D5185(m) 941 1070 932 Calcium ppm ASTM D5185(m) 1020 1152 992 Phosphorus ppm ASTM D5185(m) 961 1076 999 Zinc ppm ASTM D5185(m) 1169 1331 1138 Sulfur ppm ASTM D5185(m) 2431 2693 2418 Lithium ppm ASTM D5185(m) <1	Molybdenum	ppm	ASTM D5185(m)		58	65	57
Calcium ppm ASTM D5185(m) 1020 1152 992 Phosphorus ppm ASTM D5185(m) 961 1076 999 Zinc ppm ASTM D5185(m) 1169 1331 1138 Sulfur ppm ASTM D5185(m) 2431 2693 2418 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 3 4 3 Sodium ppm ASTM D5185(m) >25 3 4 3 Sodium ppm ASTM D5185(m) >20 1 2 5 Fuel % ASTM D5185(m) >20 1 2 5 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >6 0.6 0.6 0.5	Manganese	ppm	ASTM D5185(m)		0	0	<1
Phosphorus ppm ASTM D5185(m) 961 1076 999 Zinc ppm ASTM D5185(m) 1169 1331 1138 Sulfur ppm ASTM D5185(m) 2431 2693 2418 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 3 4 3 Sodium ppm ASTM D5185(m) >25 3 4 3 Sodium ppm ASTM D5185(m) >20 1 2 5 Potassium ppm ASTM D5185(m) >20 1 2 5 Fuel % ASTM D7593* >3.0 3.6 3.8 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7624* >6 0.6 0.6 0.5	Magnesium	ppm	ASTM D5185(m)		941	1070	932
Zinc ppm ASTM D5185(m) 1169 1331 1138 Sulfur ppm ASTM D5185(m) 2431 2693 2418 Lithium ppm ASTM D5185(m) <1	Calcium	ppm	ASTM D5185(m)		1020	1152	992
Sulfur ppm ASTM D5185(m) 2431 2693 2418 Lithium ppm ASTM D5185(m) <1	Phosphorus	ppm	ASTM D5185(m)		961	1076	999
Lithium ppm ASTM D5185(m) <1		ppm	ASTM D5185(m)		1169	1331	1138
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 3 4 3 Sodium ppm ASTM D5185(m) 6 9 12 Potassium ppm ASTM D5185(m) >20 1 2 5 Fuel % ASTM D7593* >3.0 3.6 3.8 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.6 0.6 0.5 Nitration Abs/cm ASTM D7624* >20 9.5 9.5 8.8	Sulfur	ppm	ASTM D5185(m)		2431	2693	2418
Silicon ppm ASTM D5185(m) >25 3 4 3 Sodium ppm ASTM D5185(m) 6 9 12 Potassium ppm ASTM D5185(m) >20 1 2 5 Fuel % ASTM D7593* >3.0 3.6 4 3.8 <1.0	Lithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium ppm ASTM D5185(m) 6 9 12 Potassium ppm ASTM D5185(m) >20 1 2 5 Fuel % ASTM D7593* >3.0 3.6 3.8 <1.0	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 1 2 5 Fuel % ASTM D7593* >3.0 ▲ 3.6 ▲ 3.8 <1.0		ppm	ASTM D5185(m)	>25			
Fuel % ASTM D7593* >3.0 ▲ 3.6 ▲ 3.8 <1.0		ppm	ASTM D5185(m)		6		
INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >6 0.6 0.6 0.5 Nitration Abs/cm ASTM D7624* >20 9.5 9.5 8.8			. ,				
Soot % % ASTM D7844* >6 0.6 0.6 0.5 Nitration Abs/cm ASTM D7624* >20 9.5 9.5 8.8	Fuel	%	ASTM D7593*	>3.0	△ 3.6	▲ 3.8	<1.0
Nitration Abs/cm ASTM D7624* >20 9.5 8.8	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	ASTM D7844*	>6	0.6	0.6	0.5
Sulfation Abs/.1mm ASTM D7415* >30 21.4 22.2 21.6	Nitration	Abs/cm	ASTM D7624*	>20	9.5	9.5	8.8
	Sulfation	Abs/.1mm	ASTM D7415*	>30	21.4	22.2	21.6



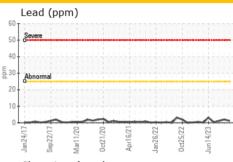
OIL ANALYSIS REPORT

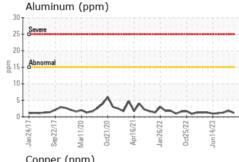


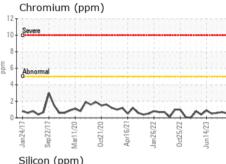


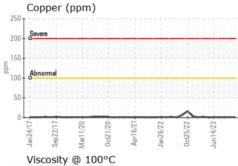
FLUID DEGRADA	NOITA	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	ASTM D7414*	>25	18.9	20.0	18.6	
VISUAL		method	limit/base	current	history1	history2	
Emulsified Water scalar		Visual*	>0.2	NEG	NEG	NEG	
Free Water scalar		Visual*	NEG		NEG	NEG	
FLUID PROPERT	TIES	method	limit/base	current	history1	history2	
Visc @ 100°C	cSt	ASTM D7279(m)	15.7	13.4	▲ 13.2	13.8	
GRAPHS							

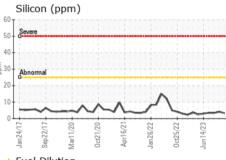
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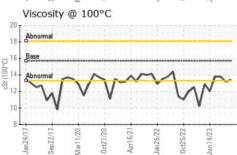


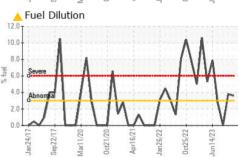














CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number **Unique Number**

: WC0877969 : 02604008 : 5697093

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Recieved Diagnosed

: 20 Dec 2023 Diagnostician : Wes Davis Test Package : MOB 1 (Additional Tests: PercentFuel)

: 19 Dec 2023

2200 UPPER JAMES,, MOUNTAIN TRANSIT STOREROOM MOUNT HOPE, ON CA LOR 1W0 Contact: Jeff Parr jeff.parr@hamilton.ca T: (905)546-2424

CITY OF HAMILTON

To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

F: (905)679-4502